themes. It is the fertility and pertinence of illustration, the masterly marshaling of facts, the discernment that detects the crucial points of difference and is not deceived by the current or surface view of things—these will be the traits that will measure the value of the work to the progress of psychology. Accordingly, the volume may be set down as one of those that has a literary style and a capacity to make the reader think. He will not always think as the writer does; but he will never listlessly muse as his eyes scan the pages, nor idly accept as dogma what is offered to his understanding.

The scope of the volume may be said to include those phases of discussion that deal with thought as a whole; with the succession of waves of consciousness and the composition of these waves. Habit, memory, imagination, dreams, originality, language, reasoning, attention, willing, emotional and esthetic products, are all subjects of chapters with headings the appropriateness of which the reader will recognize only as he proceeds. There is no detailed study of the senses nor of the nervous system; for it is maintained that science has progressed only so far that general illustrations of these alone find a place in the psychology now possible. The results of the experimental or laboratory psychology are regarded as too incomplete and too artificial to modify more than incidentally the more vital considerations that flow from experimental introspection. Genetic sources are considered; though the topic is the mind of man, and thus deals but little with the minds of animals.

The opinion is frequently heard that, in spite of the enormously increased attention that is now given to psychological matters, and in spite of the conviction, only occasionally challenged, that psychological principles have great potency to guide the practical path of culture and education, yet so little that is tangible enough to be summarized and entered to the credit side of the progressive inventory of science can be written upon the pages allotted to psychology. Apart from the pertinent query as to how far such difficulty is itself significant, it may well be concluded that psychology might profit by a shaking up rather than by efforts to harmonize essentially opposed tendencies; that the time has come, not for repairing old clothes, but for making new ones. Those who feel that there is some force in such considerations, as well as many others whose interest in matters psychological is less comprehensive or less professional, will find much food for reflection—and food pleasantly prepared and vigorous withal—in the pages of Mr. Spiller's notable work.

JOSEPH JASTROW.

Archiv für Protistenkunde. Edited by DR. FRITZ SCHAUDINN in Rovigno, Istria. Jena, published by Gustav Fischer. Price, M. 24 per Band.

In the future, as in the past, it is not improbable that works dealing with the unicellular plants will continue to be published in botanical journals, and papers dealing with the bacteria will appear sometimes in one and sometimes in another, or that monographs on the Protozoa will still be brought out in strictly zoological periodicals. This will involve the continuation of an old bibliographical difficulty for those investigators whose problems carry them into the more general aspects of the unicellular organisms. These difficulties may, however, be considerably lessened if students of the several groups mentioned would send their contributions to the *Archiv für Protistenkunde.* This is a journal devoted exclusively to the publication of papers upon the unicellular organisms, and under the direction of one of the most capable students of these forms. It is sincerely to be hoped that the object of the new journal will be fulfilled, and that students of the unicellular plants and animals in America will interest themselves in the project and contribute to its support.

Two numbers of the *Archiv* have already appeared, and the contents of the first give an adequate view of the scope of the periodical. In this there are six contributions which vary in length from two or three pages, as in Prowazek's note on *Trichomonas hominis,* to nearly eighty pages in Lohmann's excellent monograph on the Coccolithophoridæ or coc-

colith-forming Protozoa. The subject-matter is also varied, this first number for example containing the following contributions:

1. 'Die Protozoen und die Zelltheorie.' An essay by Professor Richard Hertwig replete with excellent points and suggestive ideas.

2. 'Bemerkungen über Cyanophyceen und Bacteriaceen.' A special morphological paper by Professor Otto Bütschli on the nature of the so-called *Centralkörper* in certain species of Nostocaceæ and Bacteria.

3. 'Beiträge zur Kenntnis der Colliden.' A systematic paper by Professor Karl Brandt on one of the orders of the Peripylarian Radiolaria.

4. 'Die Coccolithophoridæ.' A morphological, and systematic paper by Dr. K. Lohmann on these little-known phytoflagellates.

5. 'Notiz über die *Trichomonas hominis*.' A note by Dr. S. Prowazek on a human parasite.

6. 'Das System der Protozoen.' A proposed classification of the Protozoa by Dr. F. Doflein.

The *Archiv* is to appear at irregular intervals and without set limits as to size. Contributions in English, German and French will be printed in these languages without German summaries.

We heartily wish for the success which the new undertaking deserves.

G. N. C.

SCIENTIFIC JOURNALS AND ARTICLES.

The Journal of Physical Chemistry, November. 'Alloys of Lead, Tin and Bismuth,' by E. S. Shepherd. A quite complete study of these alloys, from which the conclusions are drawn that from them the tin crystallizes pure, but often in an unstable denser form; and that lead and bismuth form two series of solid solutions, in each case with contraction. When the fused alloys are cooled fairly rapidly the saturation concentrations are not reached. A bibliography accompanies the paper. 'Influence of the Solvent in Electrolytic Conduction,' by Harrison Eastman Patten. A paper from the University of Wisconsin presenting the following conclusions among others: The lowering of the specific electrical conductivity of non-aqueous solutions by addition of a pure solvent has been found to be approximately proportional to the number of gram-molecules of solvent added. Here is offered a new method for molecular weight determinations. Electrical conductivity seems to be the resultant of: (1) The tendency of some molecules to transfer the charge produced by an impressed electromotive force, and (2) the resistance offered to this transfer of charge by other molecules. Conduction of electricity by solutions depends upon the fact that a compound is formed by the solvent and solute when solution takes place.

The *Botanical Gazette* for November contains the following papers: D. S. Johnson contributes additional morphological information in reference to the Piperaceæ, describing the ovule, seed and fruit of *Piper;* the development and germination of the seed of *Heckeria;* and the germination of the seeds of *Peperomia* and *Heckeria*. The development of the ovary, ovule and embryo-sac in *Piper* and *Heckeria* differs widely in several respects from that found in the related genus *Peperomia*. *Piper* and *Heckeria* differ strongly from one another in the formation of endosperm, which in the former begins with free nuclear division, and in the latter with cell formation. In germination the swelling of the endosperm and embryo bursts the seed coats and the endosperm protrudes through the rent as a sac which continues to surround the embryo until foot, root and cotyledons are differentiated. The author concludes that the aleurone containing endosperm of these forms acts as a digesting and absorbing apparatus for transferring the starch stored in the perisperm to the embryo. He calls attention to several other genera in which a small amount of endosperm separates periplasm and embryo and seems to serve this function. Henry Kraemer discusses the structure of the starch grain, the results of his observations being that the starch grain consists of colloidal and crystalloidal substances, these being arranged for the most part in distinct and separate lamellæ. The reason that this struc-